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ABSTRACT

Employing 1970 U.S. census data, tests were conducted to examine the empirical evidence on the existence of U.S. labor market segments. Some comparisons between the labor market for males and females were made, but the analysis concentrates on males. Labor markets were divided by race, sex, job types (secondary, primary subordinate, primary independent, and crafts) and industry types (public and private). The basic concern was with intra-segment economic position, defined as annual earnings. One hypothesis tested was that mobility between occupational and industrial segments is limited for blacks and whites and males and females. Data analysis revealed that white males have much higher upward mobility out of secondary labor markets than do blacks. Regression estimates demonstrated that schooling and age are significant correlates of upward mobility for males. In comparing male and female regression estimates by segment it was found that women receive lower salaries than men and generally get a lower pay-off to additional schooling and higher age. Overall study results, while neither proving nor disproving the existence of a segmented labor market, indicate considerable stability over a five-year period in types of jobs and industries people work in, large earnings differences among occupational segments and private industries, and the relationship among education, work experience, and earnings differing among job types but not between industry types. (CSS)

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SEGMENTED LABOR MARKETS: SOME EMPIRICAL FORAYS

by

Martin Carnoy and Russell W. Rumberger

Discussion Paper 75-2

May, 1976

Project: Educational Requirements for Industrial Democracy

CENTER FOR ECONOMIC STUDIES
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FOREWORD

One of the important functions of schools is the preparation of the young for the world of work. Research on the nature of educational organizations and the production of educational services has stressed the correspondence between the activities and outputs of the schools with the requirements of work organizations. In recent years worker dissatisfaction has been rising, and it appears that there has been an associated increase in employee disruption of production. Some business firms have responded to these problems by attempting to reorganize work to increase the participation of workers in decisionmaking and to change the nature of jobs. This movement towards greater "industrial democracy" is gaining momentum both in the United States and in Europe, and as a result it appears to be generating a new set of requirements for worker characteristics.

The purpose of the project on Educational Requirements for Industrial Democracy is to examine the correspondence between socialization to occupational roles generally--via education, in particular--and the organization and content of work. An understanding of this correspondence is then applied to the study of changes in the nature of work in order to predict new demands that will be placed on the education system and other institutions of socialization. The analysis of possible responses of educational institutions to such demands will inform debate on educational reforms at both the curricular and institutional level.

The project research involves parallel examination of schools and firms in order to ascertain the correspondence between the formation and utilization of workers' traits in the context of traditional modes of work organization and under the various approaches to industrial democracy. This research will include the study of the supply of worker traits, socialization to occupational roles, educational production relations in the U.S. schools, the operation of U.S. labor markets and the demand for educational characteristics, and the relationship between worker characteristics, job characteristics and worker productivity.

A taxonomy of educational reforms and a taxonomy of the dimensions of work reform will be developed to provide an analytic framework for

describing important distinctions between reforms of education and work respectively. Commonly proposed reforms, and reforms with which there is some practical experience will be described with the aid of these taxonomies.

A survey will be conducted of selected firms in the U.S. and abroad that have experimented with different forms of work reorganization constituting varying degrees of industrial democracy. Similarly, a survey is planned of selected schools that are experimenting with corresponding types of school reorganization and educational reforms. Special attention will be given to the relevance of the most prominent types of educational reform for changing the educational characteristics of workers in order to meet the new work requirements.

The discussion paper presented here is part of a series of papers reporting on-going research. The final project report will represent a comprehensive document that outlines the probable extent and impact of work reorganization on schools and the educational system.

I. INTRODUCTION

In the preceding chapters, we have discussed how segmentation theory contests orthodox theory's assumptions that profit maximizing employers evaluate workers in terms of their individual characteristics and that all workers have a wide range of options among jobs and among different forms of training. To the contrary, segmentation implies that the labor market is fragmented into persisting groups, identifiable by rather permanent group characteristics. Those who fall into one or another of these groups have different patterns of work life which emerge not from individual choice or individualized employer evaluation but largely from the structure of the labor market for particular sets of jobs.

In this chapter we test for the existence of segmented labor markets as defined by criteria presented in that literature. For our tests, we use the large body of data from the 1970 U.S. census sample, specifically, the 1/1000 county group public use sample. Our purpose is not to verify one theory or another, but to examine empirical evidence on the existence of segments in the U.S. labor market. Indeed, our results appear to challenge both the neo-classical and the segmented labor market notions of the way the current labor markets work.

II. EMPIRICAL TEST OF SEGMENTED LABOR MARKETS

Others have attempted to test empirically the existence of segmented labor markets. Andrisani (1973) using data gathered by Herbert Parnes and his associates at Ohio State, measured earnings functions in "secondary" and "primary" markets for both black and white males. But he defined the division in labor markets as the median income: those above the median were in the primary markets and those below, in the secondary market. Osterman (1975) divided census occupational classifications into secondary, primary subordinate, and primary independent--rather vague criteria, apparently based on Osterman's "judgment" of what category each occupation fell into. This resulted in almost 85 percent of his OEO sample observations falling into the primary subordinate category. Rosenberg (1975) did not deal with earnings functions; rather, he estimated the determinants of worker's job sector (in Rosenberg's study, secondary and primary segments), and mobility between job segments. He defined the secondary segment in a manner quite similar to ours, using the Dictionary of Occupational Titles (DOT) job descriptions (type of task, training, and education) as applied to the 1960 census occupational classification by Robert Lucas at UCLA (1973). His primary segment is essentially those jobs which are not in the secondary labor market. Rosenberg used samples from low income areas of four cities: Cleveland, Brooklyn, San Francisco, and Boston.

Both Andrisani and Osterman found differences in earnings functions for different job markets. Rosenberg found limited mobility between job segments, especially for minority groups. The advantage of our data is the large sample size, general coverage of the labor force, and the possibility of testing mobility between types of jobs and types of industries. Also we have been much more careful than Osterman in developing job segments consistent with the criteria developed for them by various versions of the theory, much in the line of Rosenberg's work.

We test two elements of the theory of segmented labor markets. First, we deal with the issue of mobility between segments of the labor market.

Secondly, we try to explain economic position within segments (as reflected by earnings) of the market among those who stay in each segment over a five year period. According to segmented labor market theory, once someone enters a particular type of work or a particular type of industry, or is born into a particular race or sex, (a) movement between one segment of the labor market and another segment is limited, and (b) economic position within a given segment of the labor market for that person is treated in the labor market differently from the way he or she would be treated if he or she were in a different part of the labor market. From the standpoint of an individual, therefore, the observable phenomena of segmented labor markets are limited mobility and differential treatment.[2]

We divide labor markets in four ways: by race, sex, type of job, and type of industry worked in. In the first division we divide races into blacks and whites, putting to one side a small minority of Americans who are nonwhite but not Negroes. In this chapter we concentrate on the analysis of males in the labor market, because of some important problems of women moving in and out of the labor market. Nevertheless, we do make some comparisons between the labor market for males and females. We divide types of jobs into four occupational segments: secondary jobs, primary subordinate jobs, primary independent jobs, and crafts. Finally we divide industry into public and private sector and private industries into "competitive" and "noncompetitive."[3]

It should be obvious that mobility between labor markets defined for different race groups or sex groups is virtually impossible, since it is difficult to change one's race or sex. Thus for black male/white male/ black female/white female segmentation with which we deal here, we were primarily concerned with intra-segment economic position, which we define by annual earnings. However, for different types of occupations and different types of industri

we are concerned with the determinants of both inter-segment mobility and intra-segment position, as well as the absolute amount of both.[4]

A note of caution: empirical tests of segmentation theory depend on the classification criteria used in determining the segments. In the emerging literature on segmentation, there are no universally agreed upon criteria for defining segments. Therefore, our results, like those of other researchers, should not be taken as conclusive by any means. The present concept is still too young to have yet developed agreed upon criteria. It would probably be useful to undertake some sensitivity analysis to see how our results would change with small changes in the classification schemes. Although Rosenberg's divisions and ours differ enough to serve as a sensitivity test of segments (the comparison of results yields no major differences in conclusions), our data sets are different.

Specifically, the hypotheses we will test will be the following:

1. Mobility between occupational and industrial segments is limited for both blacks and whites, male and female.

2. The mobility which does occur is random; i.e., it does not follow any pattern predicated on individual characteristics of those who move and don't move.

3. Age-earnings profiles for blacks and whites in secondary occupations are flat (no significant increase in earnings with increased age) while there are significant increases in earnings with increasing age in primary subordinate and primary independent jobs (internal labor markets).

4. Similarly, in competitive private industries, age-earnings profiles are flat, while in noncompetitive private industries, there are significant increases in earnings over working life.

5. In secondary jobs, increased education is not rewarded, while in primary jobs, particularly primary independent jobs, it is.

6. Employers do not seek stability of employees in secondary jobs and in the competitive private sector, si e secondary jobs or jobs in the competitive sector tend to be more temporary; thus stability is not rewarded by additional earnings.

III. THE LABOR MARKET FOR MEN

Mobility Between Occupational and Industrial Segments

The first hypotheses we test with our data is that there is limited movement over time between different segments defined by occupation and type of industry. The 1970 census data asked not only the respondent's present occupation and industrial sector worked in, but what occupation and industrial sector the respondent worked in five years ago. Tables 1 and 2 show the percentages of all those in our sample in each race group as to their reported occupational segment five years ago and their current (1970) job. We observed from these tables that black males are less upwardly mobile from secondary jobs (24.1% vs. 39.8%) and the more downwardly mobile from primary independent jobs (22.0% vs. 13.1%). Although all those who start out in primary subordinate jobs tend to be relatively stable in those jobs, the pattern of mobility from primary subordinate jobs is different for blacks and whites: black males have an especially high tendency to downward mobility from primary subordinate jobs to secondary jobs (9.1% vs. 5.2% for whites) while white males have a tendency to upward mobility from primary subordinate to primary independent (8.4% vs. 2.9% for blacks).

What are the implications of these figures? They show that white males, for example, have much higher upward mobility out of the secondary labor market than do blacks. This means that if a black male is working in the secondary labor market he has a greater likelihood of remaining in his secondary job than does a white.

TABLE 1

Occupation in 1970 by Occupation in 1965 for White Males

Occupation in 1965-Segment		Occupation in 1970 - Segment: Secondary	Primary Subordinate	Primary Independent	Crafts	Former Armed Forces	Unemployed	Row Total
Secondary	Number	2,659	1,226	338	191	0	0	4,414
	Row %	60.2	27.8	7.7	4.3	0.0	0.0	9.9
	Column %	38.2	5.9	2.6	5.0	0.0	0.0	
	Total %	6.0	2.7	0.8	0.4	0.0	0.0	
Primary Subordinate		790	12,807	1,285	384	0	0	15,266
		5.2	83.9	8.4	2.5	0.0	0.0	34.2
		11.3	61.8	10.0	10.0	0.0	0.0	
		1.8	28.7	2.9	0.9	0.0	0.0	
Primary Independent		223	927	8,444	120	0	0	9,714
		2.3	9.5	86.9	1.2	0.0	0.0	21.8
		3.2	4.5	65.5	3.1	0.0	0.0	
		0.5	2.1	18.9	0.3	0.0	0.0	
Crafts		95	352	158	2,087	0	0	2,692
		3.5	13.1	5.9	77.5	0.0	0.0	6.0
		1.4	1.7	1.2	54.2	0.0	0.0	
		0.2	0.8	0.4	4.7	0.0	0.0	
Occupation Not Reported		343	1,226	683	249	3	0	2,504
		13.7	49.0	27.3	9.9	0.1	0.0	5.6
		4.9	5.9	5.3	6.5	12.0	0.0	
		0.8	2.7	1.5	0.6	0.0	0.0	
Unemployed and Not in Labor Force		2,854	4,180	1,985	821	22	133	9,995
		28.6	41.8	19.9	8.2	0.2	1.3	22.4
		41.0	20.2	15.4	21.3	88.0	100.0	
		6.4	9.4	4.5	1.8	0.0	0.3	
Column Total		6,964	20,718	12,893	3,852	25	133	44,585
		15.6	46.5	28.9	8.6	0.1	0.3	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

TABLE 2

Occupation in 1970 by Occupation in 1965 for Black Males

Occupation in 1965-Segment		Occupation in 1970 - Segment: Secondary	Primary Subordinate	Primary Independent	Crafts	Unemployed	Row Total
Secondary	Number	738	186	16	32	0	972
	Row %	75.9	19.1	1.6	3.3	0.0	22.4
	Column %	47.7	9.1	4.3	9.5	0.0	
	Total %	17.0	4.3	0.4	0.7	0.0	
Primary Subordinate		115	1,095	37	12	0	1,259
		9.1	87.0	2.9	1.0	0.0	29.0
		7.4	53.3	9.8	3.6	0.0	
		2.6	25.2	0.9	0.3	0.0	
Primary Independent		21	28	191	5	0	245
		8.6	11.4	78.0	2.0	0.0	5.6
		1.4	1.4	50.8	1.5	0.0	
		0.5	0.6	4.4	0.1	0.0	
Crafts		10	14	5	147	0	176
		5.7	8.0	2.8	83.5	0.0	4.1
		0.6	0.7	1.3	43.6	0.0	
		0.2	0.3	0.1	3.4	0.0	
Occupation Not Reported		116	146	27	25	0	314
		36.9	46.5	8.6	8.0	0.0	7.2
		7.5	7.1	7.2	7.4	0.0	
		2.7	3.4	0.6	0.6	0.0	
Unemployed and Not in Labor Force		548	585	100	116	29	1,378
		39.8	42.5	7.3	8.4	2.1	31.7
		35.4	28.5	26.6	34.4	100.0	
		12.6	13.5	2.3	2.7	0.7	
Column Total		1,548	2,054	376	337	29	4,344
		35.6	47.3	8.7	7.8	0.7	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

Once we divide the total groups by age, the differences become much more striking. In Table 3 we show the percentage of the group starting out in the secondary labor market five years ago who stayed in secondary jobs. The percentage of young white males who stay in secondary jobs is very low. Among those who were 20 to 24 years old in 1970, the differences in the percentages of whites and blacks who start in the secondary labor market and who stayed there is large, and the difference persists, growing significantly smaller only among workers older than 35 to 44 years old. In essence, this means that the first job in a secondary labor market for young whites, particularly young white males, appears to be a temporary situation. For blacks, it is much more likely to be a permanent situation, This also means that the first job would probably not be a very good indicator of future occupation for young whites but is a much better indicator of future occupation for young blacks. [5]

On the other hand, the opposite appears to be true for those who start out in primary independent jobs. Table 4 shows that young black males, 25 to 34 years old, have a much higher downward mobility than young white males. Thus for young males in higher occupation positions the first job is a much better indicator of future position for whites than for blacks, just the opposite of the condition which seems to prevail in lower paying jobs. [6]

There is an additional dimension to the downward mobility of black males in primary independent jobs: In all groups, those employed in the public sector had much higher stability in primary independent jobs than those employed in the private sector(Carnoy, Girling, and Rumberger, forthcoming, 1976). This difference was particularly striking for blacks. For example, of those black males with primary independent jobs in 1965 who were employed in the private sector in 1970 only 61 percent were in primary independent jobs in 1970. On

TABLE 3

Percent Staying in Secondary Jobs by Age, Between 1965 and 1970

Age	Males	
	Whites	Blacks
20-24	32.9	64.9
25-34	43.3	61.5
35-44	63.6	74.5
45-54	72.0	85.2
55-64	80.2	82.1
65+	85.3	84.9

TABLE 4

Percent Staying in Primary Independent Jobs by Age, Between 1965 and 1970

Age	Males	
	Whites	Blacks
20-24	48.9	-
25-34	81.8	68.9
35-44	89.1	84.5
45-54	88.6	81.0
55-64	89.1	87.2
65+	88.6	75.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

TABLE 5

Industry in 1970 by Industry in 1965
Within Private Sector for White Males

Industry in 1965[a]		Industry in 1970: Competitive	Industry in 1970: Non-Competitive	Row Total
Competitive	Number	16,213	1,813	18,026
	Row %	89.9	10.1	54.5
	Column %	67.9	19.6	
	Total %	49.0	5.5	
Non-Competitive		976	5,894	6,870
		14.2	85.8	20.8
		4.1	63.8	
		2.9	17.8	
Unemployed and Not in Labor Force		6,675	1,532	6,207
		81.3	18.7	24.8
		28.0	16.6	
		20.2	4.6	
Column Total		23,864	9,239	33,103
		72.1	27.9	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

a. The Census does not distinguish between private and public sector industry classifications in 1965 but the distinction is made for industrial classifications in 1970.

TABLE 6

Industry in 1970 by Industry in 1965
Within Private Sector for Black Males

Industry in 1965[a]		Industry in 1970: Competitive	Industry in 1970: Non-Competitive	Row Total
Competitive	Number	1,617	149	1,766
	Row %	91.6	8.4	53.4
	Column %	61.0	22.6	
	Total %	48.9	4.5	
Non-Competitive		69	353	422
		16.4	83.6	12.8
		2.6	53.6	
		2.1	10.7	
Unemployed and Not in Labor Force		964	157	1,121
		86.0	14.0	33.9
		36.4	23.8	
		29.1	4.7	
Column Total		2,650	659	3,309
		80.1	19.9	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

a. The Census does not distinguish between private and public sector industry classifications in 1965 but the distinction is made for industrial classifications in 1970.

the other hand, of those black males who were employed in the public sector in 1970, over 90 percent who started out in the primary independent segment stayed in that segment. We conclude, then, that the public sector provides much more stability of primary independent jobs, particularly for blacks.

Turning now to mobility between industrial sector segments, Tables 5 and 6 show the movement of private employees between the sector in which they were employed in 1965 and that of 1970. We see that for both blacks and whites there was less movement from the private competitive to the noncompetitive industries than from the noncompetitive to the competitive over the five year period. However, blacks had somewhat less sectoral stability than whites. As we can see from the percentages of employees who were not in the labor force five years ago (NA) both black and white young males were more likely to enter into the competitive sector than into the noncompetitive sector.

Our data indicate that upward mobility in occupational segments does yield higher incomes and seems to be based in part on the higher educaiton of those who move (Carnoy and Rumberger, 1975, Table 11).

The reason for the income differences between the competitive and non-competitive industrial sectors is less clear, particularly for whites, and having moved from a competitive industry to a noncompetitive industry does not seem to yield higher income for white males even though the average education of those who moved in higher; those who stayed in the competitive sector on the average receive higher earnings than those who moved (Carnoy and Rumberger, 1975, Table 12). This seeming contradiction occurs probably because those who changed sectors are younger on the average than those who stayed in the competitive sector.

Now, what are the correlates of mobility between occupation segments and between the competitive and noncompetitive industrial sectors for black and white males? Tables 7 and 8 present the least-squares regression results for upward and downward mobility of white and black males. The dependent variable is the probability of mobility from one segment to another (see Chart 1). Although we can explain only a small percentage of the total variance in movement from one occupational or industrial sector segment to another, it is clear from the regression estimates that schooling and age are significant correlates of upward mobility for both blacks and whites when the least-squares estimation is used.[7]

TABLE 7

Estimated Regression Coefficients, Dependent Variable Intersegment Mobility, White Males, 1970 (Percent)

Variable	(1) Secondary → Prim. Subordin.	(2) Prim. Subordin. → Prim. Independ.	(3) Private Sector Competitive → Non-Competitive	(4) Prim. Subordin. → Secondary	(5) Prim. Independ. → Prim. Subordin.	(6) Private Sector Non-Compet. → Competitive
College 5 Years Ago	.031	.174***	.099***	-.040**	-.021	-.052*
≤8 Years of School	-.075***	-.056***	-.029***	.032***	.040***	.042***
9-11 Years of School	-.059***	-.045***	-.026***	.013**	.037***	.022*
13-15 Years of School	.170**	.139***	-.005	.026	-.019	.094***
16 Years of School	-.145	.064***	.027	-.055***	-.063***	-.091***
17 Years of School	-.245	.180***	.008	-.066**	-.102***	-.044
18+ Years of School	-	.209***	-.015	-.066*	-.094***	-.056
Married	.130***	.021**	.032***	-.013	.017	.013
Was Married	.057	.037***	.012	.008	.055***	.063**
15-19 Years of Age	.116**	-.043	.032	.162***	.650***	.232**
20-24 Years of Age	.301***	.034***	.114***	.088***	.319***	.229***
25-34 Years of Age	.184***	.029***	.050***	.027***	.052***	.129***
45-54 Years of Age	-.088***	-.021***	-.015**	-.006	-.006	-.038***
55-64 Years of Age	-.135***	-.023***	-.029***	-.013**	-.024***	-.042***
65+ Years of Age	-.152***	-.040***	-.042***	.027**	-.014	.150***
Public Sector	.012	.008	-	.004	-.050***	-
Self-Employed	-.059	.138***	-	-.025***	-.131***	-
Vocational Training	.074***	.006	-.013***	-.018***	-.006	-.003
Private Non-Compet.	.030*	.000	-	-.012**	-.060***	-
Currently Attend. Sch.	-.025	.020	-.025*	.054***	-.004	-.010
Spanish Surname	-.087***	-.031*	-.031**	.043***	-.055*	.017
R^2	.140	.109	.028	.022	.084	.049
Mean Mobility	.316	.091	.101	.058	.099	.142
N of Sample	3,885	14,092	18,026	13,597	9,371	6,870

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

TABLE 8

Estimated Regression Coefficients, Dependent Variable Intersegment Mobility, Black Males, 1970 (Percent)

Variable	(1) Secondary → Prim. Subordin.	(2) Prim. Subordin. → Prim. Independ.	(3) Private Sector Competitive → Non-Competitive	(4) Prim. Subordin. → Secondary	(5) Prim. Independ. → Prim. Subordin.	(6) Private Sector Non-Compet. → Competitive
College 5 Years Ago	-.047	.313***	.068	-.111	.019	.112
≤8 Years of School	-.081**	-.020	-.069***	.064***	.128*	.028
9-11 Years of School	-.076**	-.025**	-.051***	.019	-.034	.035
13-15 Years of School	-.108	-.088*	.285***	.013	-.023	-.174
16 Years of School	-.099	.189***	-.297***	-.055	-.151	.105
17 Years of School	-	.195**	-.416*	-.075	-.105	-.071
18+ Years of School	-	.175	-.423***	-.086	-.109	.255
Married	.059	.027	.067***	-.040	-.060	.130**
Was Married	.027	-.005	.036	-.021	.009	.280***
15-19 Years of Age	-.079	-.006	-.032	.096	-	.151
20-24 Years of Age	.116**	-.021	.089***	.099**	-	.200**
25-34 Years of Age	.128***	.015	.051***	.047**	.153**	.069
45-54 Years of Age	-.080**	-.008	-.009	.013	.067	-.049
55-64 Years of Age	-.041	-.014	-.004	.030	-.035	-.029
65+ Years of Age	-.059	.032	-.009	.148***	-.074	.342**
Public Sector	-.001	.020	-	-.019	-.145**	-
Self-Employed	-.101	.128***	-	-.070	-.282***	-
Vocational Training	.076**	-.020	.064***	.000	-.014	.125***
Private Non-Compet.	.002	.020	-	-.008	-.026	-
Attending School	.062	.006	.119**	.055	-.085	.113
Spanish Surname	.410	.011	-.128	-.150	.121	
R^2	.050	.106	.050	.013	.140	.050
Mean Mobility	.201	.033	.084	.095	.128	.164
N of Sample	924	1,132	1,766	1,210	219	422

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

CHART 1.

List of Variables Used in Regressions

Variable	Explanation
College 5 Years Ago	Dummy - value = 1 if respondent was attending college 5 years ago
Currently Attending School	Dummy - value = 1 if respondent was currently attending school
≤ 8 years of school	Dummy - value = 1 if number of years completed by respondent was 8 years or less
9-11 years of school	Dummy - value = 1 if number of years of school completed by respondent was between 9 and 11
13-15 years of school	Dummy - value = 1 if number of years of school completed by respondent was between 13 and 15
16 years of school	Dummy - value = 1 if number of years of school completed by respondent was 16
17 years of school	Dummy - value = 1 if number of years of school completed by respondent was 17
18+ years of school	Dummy - value = 1 if number of years of school completed by respondent was greater than 18.
Married	Dummy - value = 1 if respondent is currently married
Was married	Dummy - value = 1 if respondent was formerly married
15-19 years of age	Dummy - value = 1 if respondent is between 15 and 19 years of age
20-24 years of age	Dummy - value = 1 if respondent is between 20 and 24 years of age
25-34 years of age	Dummy - value = 1 if respondent is between 25 and 34 years of age
35-44 years of age	Dummy - value = 1 if respondent is between 35 and 44 years of age
45-54 years of age	Dummy - value = 1 if respondent is between 45 and 54 years of age

CHART 1 (continued)

Variable	Explanation
55-64 years of age	Dummy- value = 1 if respondent if between 55 and 64 years of age
65+ years of age	Dummy - value = 1 if respondent is more than 65 years of age or greater
Weeks Worked	The number of weeks worked by the respondent the year preceding the survey
Hours Worked	The number of hours worked by the respondent during the reference week (a "typical" week of the preceding year)
Spanish Surname	Dummy - value = 1 if respondent has a Spanish surname (ascertained only for whites living in five southwestern states)
Public Sector	Dummy - value = 1 if respondent currently is employed in public sector
Self-employed	Dummy - value = 1 if respondent currently is self-employed
Vocational Training	Dummy - value = 1 if respondent has taken vocational training previously
Private Noncompetitive	Dummy - value = 1 if respondent is currently employed in the private noncompetitive sector
	Dummy variables - value = 0 otherwise

Since we are using dummy (dichotomous) variables for each level of education and age as well as for the other sets of variables (see Chart 1), coefficients shown for each variable in Tables 7 and 8 represent the difference between the left-out dummy variable and the dummy variable shown. For example, the left-out dummy in the education set is completed high-school (12 years of schooling). Thus we see that the mobility from the secondary segment to the primary subordinate segment is negatively and significantly correlated with having completed primary school or less or incomplete high school. In both cases, for blacks mobility is about 8 percentage points less for those with these lower levels of schooling than those who completed high school. For whites, the mobility of both these groups is about 7 percentage points less than for those who completed high school. Age also is highly correlated with mobility from the secondary to the primary subordinate labor market segment. Those at lower ages generally have significantly higher mobility while those at higher ages generally have significantly lower mobility. In general, the age factor does not seem to be as important for blacks as for whites. Furthermore, downward mobility for blacks from the primary subordinate to the secondary segment and from the primary independent to the primary subordinate segment and from noncompetitive industries to competitive industries cannot be explained by either age or education. Being married has a significant positive coefficient, which is particularly large for movement from the secondary to primary subordinate segment for both blacks and whites. Thus married white males have considerably higher upward mobility even when education, age, and other factors are held constant. Interestingly enough, the type of

industry worked in does not have a significant effect on either upward or downward mobility and neither does public sector employment. For white males, coming from an ethnic group with Spanish surname reduces upward mobility and contributes to downward mobility, even when all other factors are held constant.

We might also hypothesize that there is greater mobility from secondary to primary subordinate jobs in competitive than in noncompetitive industries, where advancement ladders are more structured and rigid, and divisions in production more hierarchical. Indeed, we find that secondary/primary subordinate mobility is lower in noncompetitive industries for white males but the age and education pattern of mobility is very similar in private industry as a whole and the noncompetite sector (Table 15).

What do our results imply? For one thing, we can explain only a small percentage of the variance in whether a person moves from one segment (as we have defined it) of the labor market to another, but there are patterns of mobility that may be affected by schooling variables, age variable, and whether a person is married or not. For certain movements -- like from the primary subordinate to primary independent segment -- other factors, such as attending college five years ago while in the labor market produces an "artificial" type of mobility, which is largely the result of a temporary stay in one type of occupation while going to college, when in fact, upon finishing college, the person enters the primary independent segement.

Thus we can say that, although we can explain only a small percent of inter-segment movement, mobility is not completely random, and even though more limited for certain groups than others and for those in certain labor markets more than for those in others, having less than average schooling clearly lowers the possibility of mobility while having more than average schooling seems to increase it. Furthermore, mobility follows well-defined patterns through age. Being black or Mexican-American definitely means lower upward mobility and higher downward mobility but being in the public or private sector does not seem to make much difference when other factors are accounted for. Again, it should be pointed out that the coefficients estimated in Tables 7, 8, and 9 are probably biased estimates, and we will not be able to make definite statements about the nature of these coefficients until we perform the probit analysis.

Mobility Internal to Different Segments of the Labor Market

Do different segments of the labor market treat various characteristics of workers differently? The theory of labor market segmentation, as we have already discussed, defines different types of segments: (1) occupational segments; (2) industry segments; (3) segmentation by race; and (4) by sex. In this section, we will test whether those males who stayed in secondary occupations between 1965 and 1969, primary subordinate occupations, and primary independent occupations have different earnings functions, and whether those males who are employed in competitive industries have different earnings functions from those employed in noncompetitive (concentrated) industries.[8] We test these differences for white males and black males separately, which allows us to compare the treatment of the same individual characteristics in the same segment for different races.

Finally, for white males we test whether earnings functions differ between competitive and noncompetitive industries for each occupational segment. Thus we are able to test the hypothesis that in each occupational segment schooling and age are rewarded differently in different types of industries -- that internal labor markets dominate concentrated industries but not competitive industries, particularly in the secondary and primary subordinate occupational segments.

To test these hypotheses, we developed for each labor market segment a recursive model in which hours worked and weeks worked are both estimated as a function of education, civil status, age, whether a person is currently attending school or not and whether the person had vocational training or education, and the type of industry in which the person is employed, and earnings as a function of those same variables plus hours worked and weeks worked. Using this recursive model we can estimate not only the differential effect of the variables on earnings, which is our principal measure of mobility within segment, but we can also test whether education and training variables have a significant effect on annual earnings and employment (weeks worked per year and hours worked per week). Although all the policy implications of our results will not be discussed in this paper, we will indicate some of the preliminary conclusions we have reached on the basis of our estimates.

Occupational Segments

Tables 10 and 11 present the regression estimates for wage and salary earnings as the dependent variable in the secondary, primary subordinate, and primary independent segments over the five-year period. As others have argued (see, for example, Wachter, 1974), those who remain in each of these

TABLE 10

Estimated Regression Coefficients, Dependent Variable Annual Earnings, by Occupational Segment, White Males (x 10^{-2} Dollars), 1970

Variable	Secondary/Secondary		Primary Subordinate/ Primary Subordinate		Primary Independent/ Primary Independent	
	A	B	A	B	A	B
Currently Attending School	-12.81***	- 6.74	-11.95***	- 9.12***	-13.67**	-11.49*
≤8 Years of School	-15.65***	-14.35***	-16.54***	-14.92***	-31.93***	-30.56***
9-11 Years of School	- 4.45**	- 4.18**	- 8.48***	- 7.56***	-18.09***	-17.26***
13-15 Years of School	1.16	2.59	20.13***	19.49***	12.78**	12.20**
16 Years of School	8.50	7.45	12.14***	12.44***	15.52**	15.68**
17 Years of School	-18.06	-15.11	15.95**	18.82***	17.43**	19.93***
18+ Years of School	-	-	25.93***	25.77***	15.56**	17.46***
Married	17.91***	15.12***	20.48***	17.70***	34.29***	33.02***
Was Married	7.62**	6.86**	6.46***	6.34***	24.72***	26.36***
15-19 Years of Age	-28.88***	-21.58***	-41.22***	-32.45***	13.44	9.74
20-24 Years of Age	-15.98***	-14.51***	-28.32***	-24.70***	-44.35***	-42.83***
25-34 Years of Age	- 3.05	- 3.07	- 8.82***	- 8.58***	-21.36***	-30.87***
45-54 Years of Age	0.77	0.49	- .29	.01	11.84***	11.99***
55-64 Years of Age	- 5.45***	- 4.57**	- 5.76***	- 4.32***	11.48***	11.85***
65+ Years of Age	-26.69***	-21.62***	-28.09***	-19.60***	-14.00***	- 7.45
Weeks Worked	-	.85***	-	1.23***	-	1.63***
Hours Worked	-	.10*	-	.14***	-	- .17**
Spanish Surname	-13.61***	-11.05***	-12.05***	-11.61***	-20.60*	-16.91
Public Sector	- 1.17	- 2.21	- 3.95***	- 5.30***	-26.23***	-25.49***
Self-Employed	-36.63***	-36.35***	-48.58***	-48.91***	-87.13***	-86.57***
Vocational Training	- 3.94**	3.98**	4.53***	4.43***	- .04	.07
Private Non-Competitive	11.28***	10.97***	5.31***	4.63***	4.20	2.39
R^2	.227	.271	.172	.205	.216	.225
N of Sample	2,659		12,807		8,444	
Mean Annual Earnings ($)	5,690		8,134		10,715	
Mean Hours Worked	37.4		40.9		44.0	
Mean Weeks Worked	47.0		49.6		50.1	

Source: U.S. Department of Commerce, Bureau of the Census, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

A = Regression excluding weeks and hours worked. B = Regression including weeks and hours worked.

TABLE 11

Estimated Regression Coefficients, Dependent Variable Annual Earnings, by Occupational Segment, Black Males (x 10^{-2} Dollars), 1970

Variable	Secondary/Secondary		Primary Subordinate/ Primary Subordinate		Primary Independent/ Primary Independent	
	A	B	A	B	A	B
Currently Attending School	- 8.17	- .72	- 4.23	- 3.41	-20.79	-22.34
≤8 Years of School	- 7.75***	- 8.37***	-14.67***	-14.03***	-27.53*	-23.94
9-11 Years of School	- 3.47	- 2.06	- 7.01***	- 7.46***	-32.35*	-25.77
13-15 Years of School	- 4.61	- 2.88	6.85	4.54	-13.63	56.58
16 Years of School	-	-	7.03	7.76	35.27	-11.70
17 Years of School	-	-	7.47	10.61	37.90	32.17
18+ Years of School	-	-	-10.05	-10.86	39.71*	39.45*
Married	12.38***	8.12***	9.44***	5.78	14.20	16.79
Was Married	4.53	1.95	9.65**	7.55*	7.44	10.14
15-19 Years of Age	-15.58**	-14.10**	-29.90***	-24.68**	-	-
20-24 Years of Age	-10.83**	-10.44**	-20.38***	-15.94***	-	-
25-34 Years of Age	- .49	- .89	- 5.21**	- 5.48**	- 5.24	- 2.82
45-54 Years of Age	- .55	- .36	- .14	- .06	- 8.37	-11.71
55-64 Years of Age	- 4.78	- 2.89	2.05	2.06	1.55	1.70
65+ Years of Age	-20.26***	-12.49***	-16.89***	-11.90*	-29.11	-26.25
Weeks Worked	-	.66***	-	.76***	-	.90
Hours Worked	-	.16**	-	.19**	-	.29
Spanish Surname	- 3.37	- 5.87	30.26	24.44	60.16	56.58
Public Sector	9.43***	8.04***	8.71***	7.31***	23.88**	26.12**
Self-Employed	-38.44***	-38.47***	-42.21***	-41.03***	-35.34***	-37.63***
Vocational Training	7.26**	4.98*	10.63***	11.00***	11.05	11.88
Private Non-Competitive	14.79***	12.11***	12.82***	12.51***	22.52	22.75
R^2	.207	.295	.200	.235	.307	.312
N of Sample	738		1,095		191	
Mean Annual Earnings	4,185		6,064		7,864	
Mean Hours Worked	36.0		38.3		39.1	
Mean Weeks Worked	45.6		49.0		48.6	

Source: U.S. Department of Commerce, Bureau of the Census, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

A = Regression excluding weeks and hours worked/B = Regression including weeks and hours worked.

labor markets may be considered as special groups. This is probably particularly true for those who remain in the secondary labor market. And, as we have shown, even for white males, this is a significant percentage of people who were in that labor market five years ago, although it is a small percentage of young white males who started out in the secondary labor market in 1965. But for black males, among whom over 60 percent of even young blacks remained in the secondary market between 1965 and 1970, the implications of our earnings equation are quite meaningful.[9]

The division into occupational segments turns out to be a division highly correlated with the average level of workers' schooling. Even though we did not use schooling as the basis of the division into segments, more educated workers tend to be in the primary independent jobs and workers with little education stay in secondary jobs. We therefore do not have a wide representation of education levels for each occupational segment; rather the low levels of education dominate the secondary and primary subordinate segments (very few observations with higher than completed high school) and high levels of education dominate the primary independent segment. Only in primary independent jobs do we have a fairly wide spread of education, since older workers in those jobs have lower levels of schooling.

The results of our estimates generally support the claims of segmentated labor market theory that in secondary jobs, additional experience (as represented by age) does not increase a worker's earnings beyond a very young age. When other variables are taken into account, earnings in secondary jobs stay flat from the late twenties to about sixty years old for black males and to about fifty years old for white males (they drop thereafter for both groups). Being young means getting significantly less income, but the difference

is lower for blacks than for whites. On the other hand, getting more education (completing high school rather than not completing) makes a difference for whites even in this labor market, but not for blacks. Only those blacks who have no high school education at all get paid significantly less than high school graduates. But vocational training (specialized training) is also rewarded in the secondary sector, especially for blacks.

The dummy variable for whether a person is married or has been married is important since it relates to stability factors in the secondary labor market as well as to the kinds of characteristics which are rewarded in that segment of the labor market. In the case of white males there is a relatively high payoff to being married or having been married as opposed to being single, taking account of age and education, and amount of time worked and sector in which worked. For black males, the coefficient of being married is also large and positive but is reduced more sharply than for white males by including weeks and hours worked in the regression. Thus although being married does have a significant direct earnings effect for blacks and whites (weeks worked and hours worked held constant) being married also has a significant effect on the amount of time worked in the year for blacks. For example, a black male married in 1970 and in the secondary labor market worked an average of four weeks a year longer than his single counterpart and a black male who had been married worked 2.5 weeks a year more than his single counterpart. In addition, the married male worked three hours more a week than the single counterpart and a black male who had been married worked two hours more a week than his single counterpart, although the latter coefficient is not significant.

For white males, the direct earnings effect of being married is even stronger than for blacks. As the coefficient in Table 10 shows, even when weeks

worked and hours worked effects are taken account of, being married pays $1500 more per year than being single.

Similarly, vocational training is also rewarded positively in secondary and primary subordinate jobs, especially for blacks. This "specific" training raises white earnings by about $400 annually, other variables held constant, while for blacks, the increase is about $500-700 in secondary jobs and more than $1000 in primary subordinate jobs. For both whites and blacks, vocational training is not significantly rewarded in primary independent jobs.

The estimate that married workers and workers with vocational training earn more in the secondary labor market raises some serious questions about the instability assumptions for the secondary labor market. A number of authors, among the Gordon, Edwards, and Reich (1973a), have argued that an important characteristic of secondary jobs is their instability, based on the desire of employers to have unstable labor in those jobs which tend to be temporary.[10] The fact that employers want these kind of workers in secondary jobs, they argue, results in a self-fulfilling prophecy: workers who remain in a secondary labor market take on personal characteristics which correspond to this desired instability. Thus they contend that secondary workers tend toward unstable work habits because this is the kind of behavior which is demanded by the labor market in which they work.

The relatively high payoffs to being married and to vocational training casts some doubts on this assumption. First of all, if we assume that employers want unstable workers, then we have to ask why they are apparently willing to pay more for married workers and for vocational training in this labor market. On the one hand, married workers are generally considered to be more stable, in

the sense that because of economic necessity, they are probably less willing to lose their job. On the other hand, if married workers need a job more than unmarried workers, they should be more easily exploited by employers and they should therefore be paid less. Those who are vocational trained should also be more stable since they somehow were stable enough to receive the training. Since none of these hypotheses seem to be empirically verified by our sample data, we have to conclude that married and vocationally trained workers somehow are either in a stronger bargaining position, other variables held constant, or the traits associated with being married or trained are more valuable to employers than those associated with being single and untrained, or that "custom" which dictates that married and trained workers should be paid more than unmarried and untrained workers holds even in the secondary labor market. We tend to think that married workers are driven by economic necessity to want to work longer hours and more weeks a year, but the fact is that they also seem to be able to get paid more on the average even when these longer weeks and longer hours are accounted for.

As segmented labor market theory predicts, education and age have a more significant relation to earnings in primary subordinate and primary independent jobs (in the case of black males in primary independent jobs, the size of the sample is so small that we have significance problems, although the behavior of the education coefficients is the same as for white males). For blacks, there are significant differences in earnings in primary subordinate jobs between those who have primary or less, some high school, and completed high school education; earnings rise to 39 years old as well, although they then level off until 60 years old. Being married appears to raise incomes for both whites and blacks in both primary markets, although for blacks the effect is not

significant except when time worked is not accounted for in the primary subordinate estimate. Perhaps the most interesting result in our analysis is that the average level of earnings and the earnings function for black males in primary subordinate jobs are similar to the average earnings and the earnings function for white males in secondary jobs. The principal differences are in the pay-off to being married, which is much higher for white males in secondary jobs, and in the role of the public sector, where black males receive significantly higher salaries in primary subordinate jobs (as well as secondary and primary independent) but white males in secondary jobs receive insignificantly lower salaries. In both cases, workers in concentrated industries earn more than $1000 more than in competitive industries, even when hours and weeks worked are taken account of.

This result can be interpreted to mean that black workers even in primary sector jobs face labor market conditions characteristic of the secondary labor market for whites. Of course, one could also argue that the only "true" secondary labor market for males is the one faced by black males in secondary jobs. But given our result that black workers in primary subordinate jobs and white workers in secondary jobs have, on the average, low earnings (about $6000 annually in 1969), a variation of only 8 percent in average earnings from age 29 to 59, and a low pay-off to taking additional schooling both in high school, but especially to years beyond high school, we contend that these are characteristics of secondary labor markets, albeit that the labor market faced by blacks in secondary jobs are even more extreme in these same characteristics

Discrimination between Anglos and Spanish surnamed Americans is shown by our equations to be significant in all three labor markets. Yet, these equations hide an interesting fact: if we separate the private from the public employees (which we did in additional regression equations which are not shown here) we find that the coefficient of Spanish surname is significant in all three segments of the private sector and the coefficients increase even more rapidly than mean incomes. On the other hand, the coefficient for Spanish surname is significant only in secondary jobs in the public sector.

The effect of public sector is important in another aspect of our estimates: white males earn significantly less in public than in private industry (both competitive and noncompetitive) primary independent noncompetitive and primary subordinate jobs, but blacks earn significantly more in the public sector than in private competitive employment in all occupational segments, and even more than in private noncompetitive industries in primary independent jobs (see Table 12). Thus while whites are better off salary-wise going into any type of private industry than into the public sector, blacks would have to get into non-competitive industries in order to fare better than in the public sector. In primary independent jobs, the public sector pays blacks better than any part of the private employment sector. It appears, then, that for minorities (blacks and Spanish surname), the public sector serves to soften the wage discrimination taking place in the private sector by paying relatively higher wages than these groups can get in private employment.[11]

TABLE 12

Means and (Standard Deviation) of Annual Earnings
by Occupational Segment, Race, and Private/Public Sector, Males 1970
(Dollars)

	Secondary/Secondary	Primary Subordinate/ Primary Subordinate	Primary Independent/ Primary Independent
All Black Males*	4,185 (2,806)	6,064 (3,448)	7,864 (6,555)
Private Employees	4,095 (2,735)	6,015 (3,414)	7.867 (5,440)
competitive/competitive[a]	3,707 (2,687)	5,591 (3,534)	6,921 (5,453)
noncomp./noncomp.[a]	5,777 (2,255)	7,427 (2,738)	9,900 (4,980)
Public Employees	4,999 (2,851)	7,129 (2,734)	11,107 ,011)
All White Males*	5,690 (4,092)	8,135 (4,887)	10,715 (10,590)
Private employees	5,872 (4,142)	8,521 (4,438)	14,088 (10,076)
competitive/competitive[a]	5,297 (3,757)	8,272 (4,744)	13,775 (10,777)
noncomp./noncomp.[a]	7,667 (4,905)	9,337 (3,786)	14,502 (8,485)
Public Employees	5,670 (2,745)	8,282 (3,949)	12,130 (5,584)

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

* Includes self-employed

a. Industry in 1970/industry in 1965 - Note: the Census does not distinguish between private and public sector industry classifications in 1965 but this distinction is made for industrial classification in 1970.

Industry Segments

According to the theoretical explanation of industrial segmentation developed in the introduction to this study, competitive industries should prefer a less stable, more temporary labor force, and noncompetitive industries, a more stable, permanent force. Thus we would expect: (1) a much greater fraction of the labor force in competitive than in noncompetitive firms to be in secondary jobs and to be black and female, and (2) those workers who are in primary subordinate jobs, to have earnings functions which are closer in appearance to secondary earnings functions (low correlation between age or education and earnings) than internal labor market promotion-type functions.

Tables 13 and 14 show the overall earnings functions for competitive and noncompetitive industries for those workers who had worked in each type of industry over the five-year period. For white males, the average earnings in noncompetitive industries are 22 percent higher than in competitive industries, and the pay-off to the highest levels of schooling is much higher in noncompetitive industries, but most other coefficients are very similar. So the level of income is lower in competitive industries but the treatment of most worker characteristics is almost identical.

For black males there are more differences between the two industry segments especially with regards to education and vocational training. In general education measured simply by years of school completed is not uniformly rewarded as in the case of whites. There appears to be a credential effect for blacks in the competitive sector where "degree-receiving" years are much more highly rewarded than "nondegree-receiving" years. In the non-competitive sector high levels of schooling and vocational training are not significantly more rewarded although there is less of the credential effect

TABLE 13

Estimated Regression Coefficients, Dependent Variable Annual Earnings, by Industry Segment, Private Sector, White Males, 1970

Variable	Competitive Industry/ Competitive Industry[a] A	Competitive Industry/ Competitive Industry[a] B	Non-Competitive Industry/ Non-Competitive Industry[a] A	Non-Competitive Industry/ Non-Competitive Industry[a] B
Currently Attending School	-16.98***	-11.38***	- 4.36	- 1.78
≤8 Years of School	-29.88***	-27.20***	-26.68***	-24.54***
9-11 Years of School	-14.80***	-13.34***	-15.06***	-14.31***
13-15 Years of School	17.43***	16.02***	23.49***	22.66***
16 Years of School	31.96***	31.85***	26.16***	26.40***
17 Years of School	32.84***	34.30***	53.38***	54.52***
18+ Years of School	31.31***	32.34***	54.96***	54.53***
Married	28.99***	24.36***	21.34***	19.28***
Was Married	12.96***	11.88***	9.80**	11.97***
15-19 Years of Age	-36.90***	-25.61***	-39.78**	-13.68
20-24 Years of Age	-34.06***	-30.21***	-25.99***	-21.33***
25-34 Years of Age	-13.60***	-13.81***	-14.59***	-13.[illegible]***
45-54 Years of Age	2.58*	3.15**	6.81***	7.52***
55-64 Years of Age	0.60	1.18	2.12	3.42
65+ Years of Age	-29.02***	-19.50***	-18.20***	- 9.48*
Vocational Training	4.64***	4.91***	5.88***	5.65***
Spanish Surname	-15.89***	-13.75***	-19.26***	-16.82**
Weeks Worked	-	1.29***	-	1.90***
Hours Worked	-	0.14***	-	0.09
R^2	0.188	.219	.213	.239
N of Sample	16,213		5,894	
Mean Annual Earnings	8,678		10,604	
Mean Hours Worked	40.3		40.3	
Mean Weeks Worked	48.4		50.6	

Source: U.S. Department of Commerce, Bureau of the Census, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.

**Significant at 5% significance level.

***Significant at 1% significance level.

A = Regression excluding weeks and hours worked/B = Regression including weeks and hours worked.

TABLE 14

Estimated Regression Coefficients, Dependent Variable Annual Earnings, by Industry Segment, Private Sector, Black Males, 1970

	Competitive Industry/ Competitive Industry [a]		Non-Competitive Industry/ Non-Competitive Industry [a]	
	A	B	A	B
Currently Attending School	- 5.32	- .78	-16.70	-14.39
≤8 Years of School	-13.28***	-12.48***	-16.64***	-14.98***
9-11 Years of School	- 6.04***	- 5.30***	- 7.94**	- 6.97*
13-15 Years of School	- 3.13	- 4.05	19.96**	22.46**
16 Years of School	45.92***	44.04***	28.34**	25.97**
17 Years of School	-16.03	-14.07	9.55	2.54
18+ Years of School	46.97***	43.86***	-18.56	-27.93
Married	10.57***	7.10***	10.39**	5.41
Was Married	4.71	3.16	6.75	2.02
15-19 Years of Age	-24.57***	-17.48***	-44.68***	-35.97**
20-24 Years of Age	-16.50***	-14.29***	-23.23***	-16.41*
25-34 Years of Age	- 2.55	- 2.35	- 1.12	- 1.
45-54 Years of Age	- .50	- .51	1.59	1.19
55-64 Years of Age	- 3.29	- 1.74	2.50	2.84
65+ Years of Age	-21.79***	-13.83***	- 3.17	7.78
Vocational Training	11.04***	10.51***	4.96	4.53
Spanish Surname	- 4.96	- 2.85	-15.27	-18.70
Weeks Worked	-	.79***	-	.85***
Hours Worked	-	.14**	-	.19*
R^2	.134	.202	.203	.248
N of Sample	1,617		353	
Mean Annual Earnings	4,835		7,060	
Mean Hours Worked	36.7		37.5	
Mean Weeks Worked	46.6		46.9	

Source: U.S. Department of Commerce, Bureau of the Census, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.

**Significant at 5% significance level.

***Significant at 1% significance level.

A = Regression excluding weeks and hours worked/B = Regression including weeks and hours worked.

[a] See Table 18

present for lower levels of post-secondary education. Again, the average earnings are much higher in noncompetitive than in competitive industries.

Part of the explanation for this large difference in earnings can be found in Table 15.[12] The distribution of workers among the segments differs significantly: of the total white males in the three occupational segments in competitive industry, 15 percent are in secondary jobs and 23 percent are in primary independent jobs; in noncompetitive industries, 11 percent are in secondary jobs and 31 percent in primary independent jobs. Furthermore, there are large average earnings differences between competitive and noncompetitive industries in the secondary and primary subordinate segments, especially in the former.

It is in this secondary segment that the largest differences in the earnings function occurs: if we take the estimated coefficients as the single best estimators of the age-earnings relationship, we find that even excluding the youngest age group, the age-earnings curve is much steeper in the noncompetitve industries up through the 35-44 year old age group (the left out dummy variable). In noncompetitive industries, those in secondary jobs face age-earnings profiles very similar (almost identical to) those in primary subordinate jobs, but with average incomes about $1,500 lower. Also, Spanish surname workers are discriminated against in competitive industries and they apparently receive equal salaries, other variables accounted for, in concentrated industries.

The other important result is that the education-earnings and age-earnings profiles for primary subordinate jobs are similar for both types of industries. The age profile is less steep for noncompetitive industries (beginning with the 20-24 year old age group), probably because starting salaries are much higher there; on the other hand, the chance for high salary increases over working life are apparently greater in competitive

TABLE 15

Estimated Regression Coefficients, Dependent Variable Annual Earnings, by Industry and Occupation Segments, Private Sector, White Males, 1970

Variable	Secondary/Secondary		Primary Subord/ Primary Subord.		Primary Indep/ Primary Indep.	
	Compet/ Compet.[a]	Non-Compet/ Non-Compet.[a]	Compet/ Compet.[a]	Non-Compet/ Non-Compet.[a]	Compet/ Compet.[a]	Non-Compet/ Non-Compet.[a]
Currently Attending School	-13.79***	-11.25	-15.98***	- 1.92	-18.58	- 5.71
8 Years of School	-17.46***	-17.61***	-19.25***	-12.71***	-39.38***	-32.82**
9-11 Years of School	- 6.92***	- 3.77	- 9.37***	- 6.97**	-19.82**	-24.28***
13-15 Years of School	- 2.15	62.85	23.27***	35.45***	- 1.44	4.10
16 Years of School	11.01	-50.52	8.89*	2.41	38.39***	29.65***
17 Years of School	-16.37	-92.30	-	-	38.65***	51.74***
18+ Years of School	-	-	-	-	23.92*	55.96***
Married	20.89***	17.94**	23.24***	16.14***	49.35***	31.17***
Was Married	9.94***	4.86	10.05***	4.18	34.02**	38.26**
15-19 Years of Age	-25.80***	-48.96	-40.55***	-45.25***	-	-
20-24 Years of Age	-13.85***	-20.68	-31.47***	-13.42***	-62.98***	-33.82
25-34 Years of Age	0.88	-11.95*	-11.14***	- 9.32***	-25.89***	-18.35***
45-54 Years of Age	1.77	- 2.85	- 1.45	- 0.43	14.52**	23.51***
55-64 Years of Age	- 7.46***	- 4.88	- 6.92***	- 3.48*	23.25***	16.30**
65+ Years of Age	-27.28***	-27.27*	-30.98***	-27.84***	-24.84**	-10.64
Vocational Training	5.35**	- 5.23	2.92**	7.95***	- 2.19	6.14
Spanish Surname	-15.39***	0.88	-12.83***	-18.74***	-28.61	-34.77
R^2	.237	.034	.128	0.128	.078	.113
N of Sample	1,585	525	6,687	2,793	2,444	1,508
Mean Annual Earnings	5,297	7,667	8,272	9,337	13,775	14,502
Mean Hours Worked	37.0	37.8	40.8	40.0	43.6	41.9
Mean Weeks Worked	46.3	49.0	49.2	50.5	50.0	51.4

Source: United States Department of Commerce, Bureau of the Census, 1/1000 Census Sample, 1970.

* Significant at 10% significance level.

** Significant at 5% significance level.

*** Significant at 1% significance level.

a See Table 18

industries, although the average salary is not as high as in the concentrated segment.

In addition, it is true that competitive industries have a higher fraction of secondary and primary subordinate workers (Table 16), and that they have a higher percentage of black male and women workers (46 versus 40 percent for concentrated industries). [13] Secondary white workers in competitive industries also have age-earnings profiles more consistent with the earnings profiles of secondary labor markets as characterized by segmented labor market theory. However, we would also expect from the theory that primary subordinate workers in competitive industries would have age-earnings profiles which do not reward more years on the job. Our estimates show that this hypothesis is not true -- primary subordinate workers in competitive industries have lower average income, but their education and age are treated similarly to those characteristics of workers in the noncompetitive sector.

IV. THE WOMEN'S LABOR MARKET

The nature of the labor market for women is complex, a detailed analysis of that market is beyond the scope of this study. However, since women form about 40 percent of the total labor force, any attempt to understand segmentation has to deal with the role played by women in the division of labor. As a start, we know that women receive lower annual wages than men for similar types of jobs even though their average schooling was higher in each type of job. They also average fewer hours worked per week and fewer weeks worked per year, which in part(and only in part) explains their lower salaries.

Furthermore, women are more likely than men to move in and out of the labor force. Tables 16 and 17 correspond approximately to Tables 1 and 2 (for males) but the former estimate the percentage of women who were in the labor force in 1965 but not in 1970: although the percentage of women who worked in 1965 but did not in 1970 declines as the occupational status rises (percent of white women declines from 30 to 23 percent and the percent of blacks, from 28 to 16), the percentage is much higher than for men in each segment.

Among those women who were in the labor force in the two years, both blacks and whites were less likely to move into a higher segment of the labor force than were corresponding race males, while those white women in higher segments were more likely to move into lower segments than white men.[14]

The mobility patterns by age (Tables 18 and 19) indicate that like white males, very young white women (20 to 25 years old) who stayed in the labor force and started out in the secondary labor market used that segment largely as a temporary situation from which to move to higher segments. This mobility was also true for young black women but to a much lesser extent. The

TABLE 16

Occupation in 1970 by Occupation in 1965 for White Females

Occupation in 1965-Segment		Occupation in 1970 - Segment: Secondary	Primary Subordinate	Primary Independent	Crafts	Unemployed and Not In Labor Force	Row Total
Secondary	Number	1,785	526	93	11	1,037	3,452
	Row %	51.7	15.2	2.7	0.3	30.0	10.6
	Column %	33.5	3.3	1.8	4.2	18.0	
	Total %	5.5	1.6	0.3	0.0	3.2	
Primary Subordinate		482	7,479	460	25	3,101	11,547
		4.2	64.8	4.0	0.2	26.9	35.4
		9.0	46.6	8.9	9.5	53.7	
		1.5	22.9	1.4	0.1	9.5	
Primary Independent		90	363	2,597	6	933	3,989
		2.3	9.1	65.1	0.2	23.4	12.2
		1.7	2.3	50.0	2.3	16.2	
		0.3	1.1	8.0	0.0	2.9	
Crafts		6	23	9	107	59	204
		2.9	11.3	4.4	52.5	28.9	0.6
		0.1	0.1	0.2	40.5	1.0	
		0.0	0.1	0.0	0.3	0.2	
Occupation Not Reported		193	598	199	17	413	1,420
		13.6	42.1	14.0	1.2	29.1	4.4
		3.6	3.7	3.8	6.4	7.2	
		0.6	1.8	0.6	0.1	1.3	
Unemployed and Not In Labor Force		2,780	7,074	1,839	98	227	12,018
		23.1	58.9	15.3	0.8	1.9	36.8
		52.1	44.0	35.4	37.1	3.9	
		8.5	21.7	5.6	0.3	0.7	
Column Total		5,336	16,063	5,197	264	5,770	32,630
		16.4	49.2	15.9	0.8	17.7	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

TABLE 17

Occupation in 1970 by Occupation in 1965 for Black Females

Occupation in 1965-Segment		Occupation in 1970 - Segment: Secondary	Primary Subordinate	Primary Independent	Crafts	Unemployed and Not In Labor Force		Row Total
Secondary	Number	597	116	10	0	47	298	1,068
	Row %	55.9	10.9	0.9	0.0	4.4	27.9	25.4
	Column %	47.2	7.3	2.4	0.0	14.9	49.6	
	Total %	14.2	2.8	0.2	0.0	1.1	7.1	
Primary Subordinate		81	692	41	5	38	193	1,050
		7.7	65.9	3.9	0.5	3.6	18.4	25.0
		6.4	43.5	10.0	23.8	12.0	32.1	
		1.9	16.5	1.0	0.1	0.9	4.6	
Primary Independent		13	27	194	0	2	44	280
		4.6	9.6	69.3	0.0	0.7	15.7	6.7
		1.0	1.7	47.2	0.0	0.6	7.3	
		0.3	0.6	4.6	0.0	0.0	1.0	
Crafts		0	2	0	3	0	7	12
		0.0	16.7	0.0	25.0	0.0	58.3	0.3
		0.0	0.1	0.0	14.3	0.0	1.2	
		0.0	0.0	0.0	0.1	0.0	0.2	
Occupation Not Reported		56	75	23	2	9	58	223
		25.1	33.6	10.3	0.9	4.0	26.0	5.3
		4.4	4.7	5.6	9.5	2.8	9.7	
		1.3	1.8	0.5	0.0	0.2	1.4	
Unemployed and Not In Labor Force		518	680	143	11	220	1	1,573
		32.9	43.2	9.1	0.7	14.0	0.1	37.4
		40.9	42.7	34.8	52.4	69.6	0.2	
		12.3	16.2	3.4	0.3	5.2	0.0	
Column Total		1,265	1,592	411	21	316	601.	4,206
		30.1	37.9	9.8	0.5	7.5	14.3	100.0

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

TABLE 18

Percent of Women Staying in Secondary Jobs by Age; Between 1965 and 1970

Age	Whites	Blacks
20-24	43.9	58.6
25-34	61.4	70.0
35-44	75.3	75.4
45-54	78.2	88.0
55-64	87.0	92.3
65+	90.3	95.3

TABLE 19

Percent of Women Staying in Primary Independent Jobs By Age; Between 1965 and 1970

Age	Whites	Blacks
20-24	64.2	-
25-34	84.6	85.4
35-44	86.8	90.0
45-54	84.7	81.4
55-64	86.9	80.6
65+	82.5	83.3

Source: U.S. Department of Commerce, 1/1000 Census Sample, 1970

most noteworthy difference between male and female mobility by age is the very rapid decline in upward movement over the five years for those women older than 25. In other words, beyond the early twenties, women are much more locked into low level jobs than men. On the other hand, women have the same or greater stability than men in primary independent jobs once they get into that segment. This feature of the primary independent market for women is due primarily to the high percentage of women at that level employed in the public sector: while in the secondary segment, only 6.1 percent of white women and 8.5 percent of black women were employed in the public sector in 1970, in the primary independent segment, 43.9 percent of white women and 63.0 percent of black women were employed in the public sector.

What Explains Mobility for Women?

What are the correlates of mobility between occupation segments for women and how do these compare with the results obtained for men (see Tables 7 and 8)? Tables 20 and 21 indicate that for women as for men we can explain very little of the movement between segments with least squared regressions.[15] And for white and black women, despite a number of small differences in the size of the regression coefficients, the influence of age and education on mobility is very similar to the effect those variables have on male mobility. Even the effect of vocational training is almost identical for men and women. However, there are several important differences in the role of other variables. For males, having attended college five years ago has a positive effect on mobility between the primary subordinate and primary independent segments, but for white women, the effect of college attendance is also important in the secondary/primary subordinate movement. For black women, it is only important in movement between those lower levels and not between the primary subordinate and primary independent segments. This means that women attending college both work in lower level jobs than men while in college and probably are more likely to end up working in a primary subordinate job than college educated men.

TABLE 20

Estimated Regression Coefficients, Dependent Variable Intersegment Mobility, White Women, 1970 (Percent)

Variable	(1) Secondary → Prim. Subordin.	(2) Prim. Subordin. → Prim. Independ.	(3) Private Sector Competitive → Non-Competitive	(4) Prim. Subordin. → Secondary	(5) Prim. Independ. → Prim. Subordin.	(6) Private Sec Non-Compet. Competitive
College 5 Years Ago	.251**	.157***	-.009	-.037	-.018	.113
≤8 Years of School	-.069***	-.020**	-.042***	.058***	.024	.037
9-11 Years of School	-.046**	-.005	-.019**	.044***	.089***	.001
13-15 Years of School	-.118	.107***	-.031	-.019**	-.113***	.035
16 Years of School	.261	.096***	-.014	.002	-.010	.056
17 Years of School	.272	.283***	-.036	-.002	-.012	-.031
18+ Years of School	-	.171***	-.038	-.014	.008	-.156
Husband Present, children	-.094**	-.036***	.008	.024*	.011	.065
Husband Present, no children	-.087**	-.025**	.016	-.012	.015	-.012
H.H.,not single, children	-.100*	-.015	-.008	.043**	.022	.070
H.H.,single, children	.001	-.014	.007	-.075*	-.011	-.020
H.H.,not single, no children	-.018	-.018	.019	.004	-.004	.010
H.H.,single, no children	-.056	-.040**	.052**	-.007	-.051	-.027
Male H.H., not single	-.023	.001	-.006	-.026	.097	-.089
Male H.H., single	-.174*	-.052	.075	.003	.049	-.035
Not single,prim.or sec. individual	-.017	-.011	.006	.005	.014	.017
15-19 Years of Age	.044	-.013	.055*	.090***	-.140	-.084
20-24 Years of Age	.250***	.020*	.095***	.039***	.134***	.186
25-34 Years of Age	.123***	.024***	.034***	.024***	.047***	.162
45-54 Years of Age	-.031	-.004	-.025**	.007	.011	.004
55-64 Years of Age	-.098***	-.017*	-.045***	-.006	.002	.008
65+ Years of Age	-.167***	-.032***	-.049***	-.009	.047*	.019
Public Sector	.171***	.036***	-	-.036***	-.046***	-
Self-Employed	.123**	.062***	-	-.031**	-.087***	-
Private Non-compet.	.058***	.003	-	-.015**	.116**	-
Spanish Surname	-.065	-.039*	-.026	.059**	-.072	-.041
Vocational Training	-.142***	.000	.024***	.025***	.034**	-.021
Attending School	.059	.040**	-.061**	.039*	-.033	.134
R^2	.111	.091	.024	.027	.078	.051
Mean Mobility	.228	.058	.096	.060	.123	.176
N of Sample	2,311	7,939	8,509	7,961	2,960	2,560

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.

TABLE 21

Estimated Regression Coefficients, Dependent Variable Intersegment Mobility, Black Women, 1970 (Percent)

Variable	(1) Secondary → Prim. Subordin.	(2) Prim. Subordin. → Prim. Independ.	(3) Private Sector Competitive → Non-Competitive	(4) Prim. Subordin. → Secondary	(5) Prim. Independ. → Prim. Subordin.	(6) Private Sec Non-Compet. Competitive
College 5 Years	0.592***	-.013	.171**	-.088	-.147	-.091
< 8 Years of School	-0.081**	-.024	-.048***	.039	-.069	.094
9-11 Years of School	-0.058	-.026	-.058***	-.005	.134*	-.075
13-15 Years of School	-0.176	.115	-.087	-.050	.166	-.146
16 Years of School	0.873**	.169*	.006	-.005	-.305**	-
17 Years of School	-	.312**	-.012	.027	-.327**	-
18+ Years of School	-	.784***	.927	-	-.268*	-
Husband present, children	-0.048	-.087**	.052***	-.092	.085	.188
Husband present, no child.	-0.004	-.104**	.058	-.090	-.018	.359**
H.H., not single, children	0.057	-.110**	.066	-.088	.177	.244
H.H., single, children	0.019	-.130*	.159***	-.106	-	.346
H.H., not single, no child.	0.027	-.129**	.061	-.041	.037	.432**
H.H., single, no children	-0.026	-.094	.074	-.025	.044	-.017
Male, H.H., not single	-0.132	-.148*	.109	-.184	.054	.279
Male, H.H., single	0.072	-.130	.039	-.197	-	-
Not single, prim.or sec. individual	-0.056	-.086*	.067*	-.037	-.079	.254
15-19 Years of Age	-0.161	-.118	-.058***	-.119	.130	-.230
20-24 Years of Age	0.147**	-.014	.099**	.042	.409**	.248**
25-34 Years of Age	0.014	-.040*	.043	.012	.012	.072
45-54 Years of Age	-0.100***	-.025	-.015	-.017	.057	-.141
55-64 Years of Age	-0.123***	-.027	-.040*	-.054	.084	-.146
65+ Years of Age	-0.128**	-.004	-.005	.072	.103	-.125
Public Sector	0.208***	.034*	-	-.094***	.009	-
Self-Employed	0.399**	.003	-	-.132**	-.194	-
Private Non-Compet.	-0.004	.041	-	-.016	-.020	-
Vocational Training	-0.179***	.005	-.039**	.042*	-.070	-.137*
Attending School	-0.098	.134**	-.079	-.010	.122	-.440
R^2	.144	.080	.059	.020	.105	.050
Mean Mobility	.166	.056	.063	.106	.121	.149
N of Sample	758	766	1,325	809	223	154

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

In addition to this difference, being married for a man means greater probability of moving to a higher segment, but for women, the opposite is true, even for those who have been married and are heads of household. The explanation for this in neo-classical terms would have to be that employers consider married women as greater risks in more responsible jobs or that married women are willing to work fewer hours per week or fewer weeks per year so cannot become eligible for the more stable primary subordinate or primary independent jobs. But this same relation can be explained by lack of motivation or employers ability to effectively exploit women who are secondary income earners.

Finally, while being employed in the public sector has no significant effect on mobility for males, public sector employment greatly enhances mobility for women. For example, in the primary subordinate to primary independent movement for white women, the average mobility was less than 6 percent overall, but was 11 percent in the public sector; and we were able to explain 27 percent of the movement in the public sector compared with 9 percent overall, largely because of the much greater effect of higher education on intersegment mobility. Those white women who had finished college or some years of graduate school and were working in primary independent jobs in the public sector in 1970 and in primary subordinate jobs in 1965 (either in the public or private sector) had a 0.4 greater probability of moving up to the primary independent segment than all white women high school graduates.

Occupational Segments

Tables 22 and 23 present the regression estimates for wage and salary earnings as the dependent variable in the secondary, primary subordinate, and primary independent segments over the five-year period for women. Women

TABLE 22

Estimated Regression Coefficients, Dependent Variable
Annual Earnings, by Occupational Segment
White Women ($x10^{-2}$ dollars), 1970

Variable	Secondary/Secondary		Primary Subordinate/ Primary Subordinate		Primary Independent Primary Independent	
	A	B	A	B	A	B
Currently Attending School	-12.74**	- 4.58	- 4.81**	- 1.90	- 0.94	- 0.35
≤ 8 Years of School	- 3.45**	- 4.17***	- 7.72***	- 5.96***	- 3.86	- 5.34
9-11 Years of School	- 0.13	- 0.86	- 5.82***	- 4.39***	- 1.72	- 2.63
13-15 Years of School	9.81	10.70	- 0.60	1.75	3.10	4.33
16 Years of School	-23.80*	-23.36*	4.96*	3.71	9.82***	13.22***
17 Years of School	-33.17	-36.65	8.41*	11.90***	16.62***	21.55***
18+ Years of School	-	-	11.97**	8.56	26.55***	26.64***
Husband present, children	- 1.49	4.28	-17.21***	-13.09***	- 6.39**	- 0.51
Husband present, no children	1.58	6.13**	-10.47***	- 9.31***	0.97	3.39
F.H.,not single, children	1.78	6.44*	- 4.48***	- 3.56**	14.59***	16.54***
F.H., single, children	3.59	6.01	- 9.49**	-11.53***	14.34	10.97
F.H.,not single,no children	3.58	5.98*	- 5.84***	- 4.88***	11.31**	11.67***
F.H., single, no children	1.40	4.96	2.82	1.11	14.43***	14.92***
Male H.H., not single	- 7.66	0.88	-11.02***	- 8.12***	- 3.09	- 5.67
Male H.H., single	- 0.72	0.68	-11.54***	-11.79***	9.60	14.14
Not single, prim.or sec. individual	5.72*	8.55***	- 6.95***	- 6.04***	5.13	4.64
16-19 Years of Age	- 9.20	- 4.13	-19.83***	-10.31***	-33.02	- 6.07
20-24 Years of Age	-10.26***	- 4.56*	- 8.13***	- 4.70***	-13.72*	- 9.23
25-54 Years of Age	- 2.70	- 1.57	- 2.30***	0.14	- 6.64**	- 3.64
55-54 Years of Age	1.80	1.19	- 0.50	- 0.19	3.48	4.06*
60-64 Years of Age	- 1.14	- 0.06	- 3.93***	- 2.95***	2.46	4.26
65+ Years of Age	-16.26***	-11.74***	-14.42***	- 8.05***	-17.50***	-12.47***
Public Sector	3.27	3.11	7.19***	6.54***	12.36***	13.76***
Self-Employed	-13.32***	-15.60***	-28.24***	-27.39***	-41.90***	-42.97***
Private Non-Competitive	12.43***	10.89***	6.40***	4.92***	11.01***	8.09***
Spanish Surname	- 5.23	- 1.74	- 4.29*	- 3.49*	- 0.84	0.01
Vocational Training	0.44	0.52	- 2.96***	- 2.86***	- 4.13**	- 3.47*
Weeks Worked	-	0.63***	-	0.86***	-	1.11***
Hours Worked	-	0.17***	-	0.23***	-	0.20***
R^2	.099	.234	.172	.357	.232	.300
N of Sample	1,785		7,479		2,597	
Mean Annual Earnings ($)	3,163		4,253		6,411	
Mean Hours Worked	32.0		34.4		35.0	
Mean Schooling	10.0		11.3		14.5	

Source: United States Department of Commerce, 1/1000 Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

TABLE 23

Estimated Regression Coefficient, Dependent Variable
Annual Earnings, by Occupational Segment
Black Women ($x10^{-2}$ dollars), 1970

Variable	Secondary/Secondary		Primary Subordinate/ Primary Subordinate		Primary Independent/ Primary Independent	
	A	B	A	B	A	B
Currently Attenting School	- 9.72	- 4.26	- 0.84	- 0.73	11.68	13.67
8 Years of School	- 5.41***	- 4.86***	- 9.97**	- 9.49**	-23.43*	-25.06**
9-11 Years of School	- 2.69	- 2.59	- 3.46	- 3.55	- 8.58	- 6.02
12-15 Years of School	- 6.00	- 1.95	12.12	9.44	22.26	22.06
16 Years of School	-	-	-10.38	- 6.09	- 8.94	0.13
17 Years of School	-	-	13.28	15.04	- 4.74	3.98
18+ Years of School	-	-	-	-	5.44	15.18
Husband present, children	- 5.23	- 3.66	- 3.65	- 1.13	- 1.80	- 0.80
Husband present, no children	- 6.27	- 4.90	- 5.07	- 3.55	3.59	2.55
F.H.,not single, children	- 1.06	- 1.50	- 1.11	0.61	30.47**	24.94**
F.H., single, children	-11.38**	- 7.05	- 4.78	- 2.98	-	-
F.H., not single, no children	- 5.15	- 5.62	- 3.13	- 1.76	14.34	14.49
F.H., single, no children	- 4.96	- 5.21	1.92	1.41	- 6.47	- 6.40
Male H.H., not single	- 4.96	- 2.64	-15.92	- 9.83	-64.22*	-24.64
Male H.H., single	-19.96	- 9.54	- 9.87	- 5.92	-	-
Not single, Prim.or sec. individual	- 1.87	- 1.74	- 6.50	- 4.99	0.86	2.14
15-19 Years of Age	5.28	5.34	-28.96**	-19.80	-	-
20-24 Years of Age	- 5.44	- 5.61	- 6.90	- 4.81	-	-
25-34 Years of Age	- 2.51	- 1.92	0.46	1.02	- 2.04	0.25
35-54 Years of Age	- 0.47	- 0.81	3.16	2.98	4.14	4.06
55-64 Years of Age	- 3.00	- 2.81	10.72**	11.49**	2.11	2.14
65+ Years of Age	-10.37***	- 7.66***	- 8.11	- 4.44	-25.50	-21.20
Public Sector	11.88***	9.12***	17.19***	17.17***	14.79**	16.71**
Self-Employed	-17.24	-20.85**	-32.98***	-28.19***	- 5.20	- 4.28
Private Non-competitive	20.11**	18.33***	11.15***	10.15***	-14.19	-19.22
Spanish Surname	-	-	3.69	1.13	-	-
Vocational Training	- 5.99**	- 4.94**	0.93	0.15	-11.23**	-11.93**
Weeks Worked	-	0.31***	-	0.32***	-	1.19***
Hours Worked	-	0.19***	-	0.20**	-	0.06
R^2	.191	.328	.101	.120	.231	.316
N of Sample	632		723		196	
Mean Annual Earnings ($)	1,980		4,016		6,546	
Mean Hours Worked	29.7		34.3		35.0	
Mean Weeks Worked	41.8		45.6		44.5	

Source: United States Department of Commerce, 1/1000 Census Sample, 1970.

*Significant at 10% significance level.
**Significant at 5% significance level.
***Significant at 1% significance level.

earn considerably less than men in each occupational segment, in part because they work fewer weeks and hours per week. The coefficients estimated for the secondary labor market are very similar to the secondary market coefficients for black males in that only those with primary schooling or less and those who are very young or very old receive significantly less earnings than other education groups and other age groups.[16]

The age and education relation to earnings becomes more complex in the primary subordinate segment because of the difference in coefficients between the estimates for the private and public sector : in the public sector, the payoff to increased education is higher than in the private employment sector, and the age-income profile is steeper. In the private sector, there is also an earlier decline in salaries, at 55-64, while in the public, the coefficient for that age group is positive. Average earnings in the public sector are higher in that segment: $4,948 vs/ $4,326 for white women and $5,327 vs. $3,685 for black women. This is also indicated by the positive coefficients for the public sector dummy in all the regressions. Note that average salaries (both sectors together) for white and black women in the segment are almost the same.

Although this point is largely speculative, the differences between the earnings and the shape of the regressions in the public and private sectors for the primary subordinate segment seem to indicate that the jobs in the private sector are probably more similar to secondary labor market jobs than to primary subordinate jobs for white males while women's "primary subordinate" jobs in the public sector are more like white males primary subordinate jobs in both the private and public sectors.This appears to be true for women of both races but particularly for black women.

In the primary independent segment the education-earnings relation

for white women is as we would expect it, with higher levels of schooling receiving a relatively high payoff. A similar pattern of returns to schooling occurs in the private and public sectors. However, in the public sector primary independent segment, the pay-off for higher age in the younger age groups is much higher than in the private sector. The relationships for black women runs into the same estimation problem we had for black men; there are so few observations that many of the coefficients are not significant.

The principal difference between the male and female regression estimates for each segment lie, first of all, in the absolute size of the coefficients of schooling and age: women not only recieve lower salaries than men, they generally get a lower pay-off to additional schooling and higher age. They are exceptions to this, such as in the primary independent segment, where white women have higher -- in absolute terms -- coefficients for graduate education than do white males.

Secondly, both white and black males earned more, other variables accounted for (including hours worked), if they were married than if they were single (see Tables 10 and 11). This relationship held true across segments the labor market. For women, however, the situation is more complex: In the primary subordinate segment, women who were married and living with their husband earned less than never married women living alone or with a group of wage earners. But those women who, whether they had ever been married or not, lived with a male head of household, earned as little or less than married women with husband present. It is important to note that this relationship held even when hours and weeks worked were accounted for, and that the relationship in the primary subordinate segment held for both black and white women. In the secondary segment, the marriage/ earnings relation is less clear: when time worked is corrected for, married

white women -- even those with husband present -- generally earn more than single women; however, thsoe black women who were or had been married generally earned less than single women without male present in that segment. And in the primary independent segment, those women, both black and white, who were heads of household, whether having been married or not, earned more than single women or married women not heads of household. Once time worked was accounted for, married women with husband present did not earn significantly less than single women in that segment. So in the higher level jobs, women acting as heads of household -- corresponding to the traditional male role in the U.S. middle class family -- received a higher salary parallel to the higher salary received by married males in that segment.

A third important difference between the male and female earnings functions is the greater statistical importance of time worked in explaining earnings variance among women than among men. The coefficients of determination (R^2) for women increase much more in almost every case when time worked is included (Tables 22 and 23) than it does for men (Tables 10 and 11). This result is expected: the variation in time worked for women is greater than that for men.

Finally, the effect of Spanish surname on white women's earnings is less than it is for men's. It is only significantly negative in the primary subordinate labor market. In that segment, the coefficient for Spanish surname is more highly negative than the one shown in the private sector (-5.46 vs. -4.29) while it is positive (but not significant) in the public sector. Similarly, in the primary independent segment, the coefficient for Spanish surname is positive in the public sector and negative in the private, though neither one is significant.

Industry Segments

As in the case of our analysis of industry segments for men, we find that there are important differences in the average pay of women workers in the competitive and noncompetitive industries ($5052 vs. $4087 for whites and $4717 vs. $2540 for blacks) but no important differences in the relationship between age, education, and earnings in the two types of industries either for white or black women.

A Note

We have dealt with the labor market for women in less detail than for men because our purpose here was strictly comparable; as we mentioned, a more in depth analysis of how women are treated in the market is beyond the scope of the study. Nevertheless, our short discussion has raised some important issues: women are not only paid less than men, but except in the primary independent segment, receive a lower pay-off to taking additional years of schooling. They also get a lower pay-off to becoming older, but as mentioned, the problem of age as proxy for experience must be investigated much more carefully than we have been able to do here. Thus, increasing schooling and not experience for low-paid women won't have much effect on their salaries unless the entire pay structure changes. Furthermore, the role of the public sector is very important for women, since in primary subordinate and primary independent jobs working in the public sector means a very different promotion and pay scale for women than the private sector. And the pay for married versus single women not only varies from segment to segment, but depends on whether the women is head of household or is a second wage-earner in the household. In the secondary and primary independent segments, at least for white women, heads of household earn more than single women and women living with their husbands. Whether

this is due to greater motivation or standard custom followed by personnel offices is difficult to say. In any case, as in the case of our results for men, the pattern of earnings as they relate to civil status raises serious questions about the instability hypothesis of segmented labor market theory.

III. CONCLUSIONS

Our results indicate that there is considerable stability over a five-year period in the types of jobs and the types of industries people work in; that there are large earnings differences between different occupational segments and between private competitive and noncompetitive industries; and that the relationship between education, work experience, and earnings differs between types of jobs but not between types of industries. This relationship also differs by race and sex, even to the extent that the public sector pays blacks and women more for the same type of jobs than in private competitive industries, but pays white males less.

None of our results "proves" that a segmented labor market exists or does not exist, but they do show that some of the notions of segmented labor market theory about the way labor markets operated tend to be true and others false. Movement between jobs and industries is fairly restricted, partly, we suppose, because of differences in educational levels "required" by employers for different jobs, and partly because of limited access to higher-paying, capital-intensive monopoly industries. This means that the characteristics of the particular labor market in which people are located heavily influence the reward level and reward structure which people will most probably face throughout their working careers. In some cases, like the secondary market, this structure results in very low returns to more schooling and to increased time in the labor force; in primary independent jobs, the opposite is true. As long as people work in the secondary market (and a high percentage of blacks do) increasing their education and training can only raise their incomes if the additional investment moves them out of secondary jobs into higher-paying ones.

In the case of competitive versus noncompetitive industries and the private versus the public sector, the situation is somewhat different; while wage levels in these different sectors may be very different, the treatment of characteristics of workers in each of these markets is not very different. Thus the move from a competitive to a noncompetitive industry in and of itself raises a workers income without any perceptible training or education increase. For black and women workers, the move from the private competitive to the public sector accomplishes a similar increase in wages, while for white males a move from the public to the private sector raises incomes.

Our findings on the marriage-earnings and vocational training relations do not support the labor market segmentation argument that secondary jobs and competitive industries demand more "unstable" workers. If instability were a generally desired characteristic of workers in the secondary labor market, we would not expect to find higher salaries paid for married male workers and head of household female workers or those with some specialized training, other variables accounted for, unless maried (head of household) workers, and those vocationally trained, -- for some reason -- were easier to fire or had higher turnover rates than single workers. Both are doubtful premises. On similar grounds, Rosenberg also questions the argument that instability is a desired trait of secondary workers: he shows that secondary workers have a relatively long average job tenure (Rosenberg 1975, Table 3-10), and that while secondary workers have higher job turnover than primary ones, the differences are not as great as segmentation theory would lead us to expect (Rosenberg 1975, Table 3-7). "Only a small part of the secondary labor force may exhibit the instability characteristic associated with secondary work while other workers in these same occupations do not." (Rosenberg 1975, p. 74).

Our analysis raises even more fundamental questions about the current formulation of segmentation theory. We have shown that blacks and white women in the primary subordinate private sector labor market have a similar reward level and structure as white males in the secondary market. We suggest that blacks and women in the secondary market are in the "true" secondary market, while white male secondary workers and black and women primary subordinate workers in the private sector work in jobs which are low level primary subordinate. White women in the public sector primary subordinate segment appear to be faced by a reward strucutre more similar to those faced by white males in the entire -- both private and public -- primary subordinate segment. White males in primary subordinate jobs, white women in public sector primary subordinate jobs, and perhaps black men and women in primary independent jobs in the private sector appear to form yet another -- and somewhat separate-- labor market. Finally, men and white women in primary independent jobs and blacks in public sector independent primary jobs have the relatively creative, self-directed, high-paying jobs associated with managerial and professional work.

We face two problems in dealing with this new configuration: First, we are not sure why the old segmentationformulation does not cross race and sex lines. The occupational categories we used for each segment are the same for blacks and for whites, and for men and women. Second, we don't know the possible variance in the nature of each occupational classification in the census. Is a black or woman production worker doing something different from a white male production worker? Are the occupations making up primary subordinate jobs for blacks and women (especially in the

private sector) different than for whites? Are blacks (men and women) kept from moving into white primary subordinate jobs because of race? Moreover, are some workers really "managers" but now fall within a job classification assigned to the secondary or primary subordinate segments?

These questions raise the possibility that the factors determining the structure and divisions in the labor market are different from those proposed by current segmentation theory. While there may exist such divisions, the differential treatment of the same worker characteristics within each segment implies that their bases may lie in the social class structure and the nature of incorporation of different groups into the labor force (see Baran and Sweezy 1966) during capitalist expansion.

FOOTNOTES

1. In addition to these three principal segments we (along with Gordon, Reich, and Edwards) include one other category: crafts. The separation of crafts from primary subordinate can be rationalized on two grounds: craft-type occupations require high levels of training but fall into the "helping" or "serving" classification of the Dictionary of Occupational Titles; and we observe that craft workers are often hired on contract from a pool of craftsmen, rather than as employees of a company. Our results for the craft segment are not presented in the regression analysis below, largely because the segment is much smaller than the others, but also because it appears that -- in income terms -- the segment is very similar in operation to primary subordinate jobs. This occurs probably because a significant percentage of craft workers do work as employees, and get approximately the same reward for their education and age as do primary subordinate workers.

2. It should be pointed out that neo-classical economists are now arguing that these same observable phenomenon (differential treatment and limited mobility) can be explained by neo-classical theory (Wachter 1974). Nevertheless, segmented labor market theory has a completely different explanation for the existence of these phenomena, arguing that differential treatment and low mobility between segments are phenomena which are rooted in the functioning of capitalist production and are not the result of temporary disequilibrium or a response to differential technology and different kinds of production (Gordon, Edwards, and Reich 1973a).

3. We have defined the meaning of the occupational segments in Carter and Carnoy (1974). For those readers interested in the exact formulation of the occupational and industrial segments from the 1970 U.S. Census classifications and detailed tables of all occupation and industry categories, this information is available from the authors. A brief description follows:

   The industrial sector was divided into competitive and non-competitive segments using data received from Barry Bluestone, William Murphy, and Mary Stevenson from the Institute of Labor and Industrial Relations, University of Michigan. We selected the variable of "average market power" in each industry category with which to determine the relative concentration of firms within each industry. Industries that showed a concentration of AMP greater than 40% were categorized as non-competitive and those less than 40% were categorized as competitive.

   The occupational sector was divided into four segments using data from the thesis of Robert Lucas (1973) which linked certain characteristics of jobs as described in the Dictionary of Occupational Titles to the classifications used by the Bureau of the Census. We used the variable of Specific Vocational Preparation (SVP)-- 9 categories -- and Relationship to People (RP) -- 5 categories -- with which to divide people into the secondary, primary subordinate

and primary independent sectors.

The General Education Level (GED) associated with each job in the census classification was purposely left out of our categorization scheme since we use worker's education as a variable in our mobility and earnings regressions. Secondary occupations were defined as those with modal SVP equal to 1 or 2 (demonstration time to 30 days training required for the job) and RP equal to "helping" or "serving." Primary subordinate jobs were defined as SVP equal to 3, 4, or 5 and RP equal to helping or serving, and SVP equal to 6, 7, or 8 and RP equal to helping. Primary independent jobs were defined as those with SVP equal to 6 through 9 and RP equal to serving, supervising, instructing, or "no classification." As mentioned above, some occupations were categorized as "crafts" because of high levels of training and our assumption about the labor market for such jobs.

Examples of a few census categories and their corresponding segment classification are:

1970 Occup. Code	1970 Occupational Description	Occupational Segment
012	Engineer - Electrical	Primary Independent
031	Lawyers	Primary Independent
085	Health Technicians	Primary Subordinate
123	Art, Music Teachers	Primary Independent
144	Secondary Teachers	Primary Independent
182	Dancers	Crafts
220	Office Managers	Primary Independent
310	Cashiers	Secondary
333	Messengers	Secondary
410	Brickmasons	Crafts
473	Mechanics - Auto	Primary Subordinate
534	Roofers and Slatters	Primary Subordinate
624	Graders and Sorters	Secondary
711	Parking Attendants	Secondary
822	Farm Labor - Paid	Secondary
935	Barbers	Primary Subordinate

4. It is important to point out that we are dealing here exclusively with intra-generational mobility and not inter-generational mobility, which is yet another important component of the operation of labor markets. We are concerned in this essay with what happens to people once they enter the labor market and only tangentially in how people get into one labor market or another.

5. Indeed, Rosenberg (1975) indicates that this is the case in three cities out of four, at least on the basis of the OLS regressions (Tables 5-1).

6. A good example of the kind of error which can be made in this regard is the contention in a recent paper by Richard Freeman presented at the University of Notre Dame's conference on Civil Rights (April 15-17, 1975) that discrimination in the United States is decreasing since first jobs of young blacks and whites for a similar education level are essentially the same, including the income they pay (although we do not look at mobility by educational level, occupational segments in our study are highly correlated with educational levels). What our results show is that for lower educated blacks and whites, there should be an important divergence over the next five years in the job mobility of the two races, with whites tending to move into higher paying occupations, while blacks tend to stay in the lower paying occupations. On the other hand, among those with higher education, whites are more likely to move into lower positions. Therefore, the fact that young blacks are getting similar paying jobs for the same amount of education may have significance in comparison with the situation 10 years ago for the same age group, but it does not mean that five years from now this same group of white and black males will have similar incomes.

7. Since the dependent variable here is a dichotomous variable (mobility or non-mobility) the error term of the least-squares regression is not normally distributed. Thus a probit analysis (maximum likelihood estimation) is more appropriate to obtain non-biased estimators. The estimators here are biased, and we will not know the degree of their bias until we run the maximum likelihood estimates.

8. We intend to analyze differences between the private and public sector in more detail in a future study.

9. Since for the purposes of these regressions we multiplied our dependent variable earnings by 0.01, each coefficient should be multiplied by 100 in order to translate it into the absolute difference in annual income between those having that characteristic as compared to those having the characteristic of the left-out dummy variable.

10. Rosenberg (1975) argues that the nature of secondary jobs encourages a high degree of instability, but many secondary workers may in fact display individual stable work characteristics in such jobs (p.74).

11. Table 18 shows the gross effect (when age and education differences are not accounted for) on income of public versus private (both competitive and non-competitive) employment by occupational segment.

12. The small number of observations in the noncompetitive category precluded making similar estimates for black males.

13. These latter figures are drawn from parallel research on the female labor force and from Tables 9 and 10.

14. The figures derived from Tables 16 and 17 are the following:

White Females in the Labor Force in 1965 and 1970

Occupation in 1970

Occup. in 1965	Secondary	Primary Subord.	Primary Indep.
Secondary	74.2	21.9	3.9
Prim. Subord.	5.7	88.8	5.5
Prim. Indep.	3.0	11.9	85.1

Black Females in the Labor Force in 1965 and 1970

Occupation in 1970

Occup in 1965	Secondary	Primary Subord.	Primary Indep.
Secondary	82.6	16.0	1.4
Prim. Subord.	10.0	85.0	5.0
Prim. Indep.	5.6	11.5	82.9

15. Note again the bias in these regressions discussed above.

16. Since women are less likely than men to stay in the labor force throughout their adult lives, the meaning of "age" in the regression is less likely to represent a proxy for "experience" than it is for men. The age variable for women is more likely to be related to some "cultural" pay scale, in the sense that women recieve a particular salary because they are of a certain age and the culture of the labor market deems that salary appropriate for that age. Of course, this may also be true for men.

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